UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/623,440	09/05/2000	Tsuyoshi Takagi	450108-02280	3925

20999   7590   02/13/2004

FROMMER LAWRENCE & HAUG
745 FIFTH AVENUE- 10TH FL.
NEW YORK, NY 10151

EXAMINER
WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 02/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _09/05/2000_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-12_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-12_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _05 September 2000_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _3_.

4) ☐ Interview Summary (PTO-413) Paper No(s). _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Detailed Action

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.   **Claims 1-6, 8, and 11** are rejected under 35 U.S.C. 102(e) as being anticipated by

Kamiya et al *(U.S. Patent: 6,175,772)*.

With respect to **Claim 1**, Kamiya discloses:

A mechanical device, characterized by comprising:

Drive means for performing a behavior *(drive means and display, Col. 10, Lines 44-62)*;

Stimulus detection means for detecting a stimulus *(Col. 4, Lines 6-14)*;

Storage means for storing a behavioral model prescribing a behavior *(storage means for

storing user intentions related with emotional models in a model for deciding robot behavior,*

Col. 7, Lines 33-46);

Control means for controlling said drive means based on the behavioral model stored in

said storage means *(behavior decision means for controlling robot functions, Col. 8, Lines 51-*

58);

Changing means for changing the behavioral model based on a predetermined stimulus

detected by said stimulus detection means *(learning and altering behavior based upon user*

interaction, Col. 7, Lines 3-25).

With respect to **Claim 2**, Kamiya recites:

Stimulus is provided by a user *(sensing means detecting stimulus from a user, Col. 4,*

Lines 6-14).

With respect to **Claim 3**, Kamiya discloses:

Stimulus detection means comprising a pressure sensor detecting pressure provided by

the user as stimulus *(Col. 4, Line 8, Fig. 3, Element 4)*; and

Changing means for changing the behavioral model based on a predetermined stimulus

detected by the stimulus detection means *(evolving robot behavior based upon a tactile user*

input, Col. 4, Lines 47-64).

With respect to **Claim 4**, Kamiya recites:

Stimulus detection means comprising a pressure sensor detecting pressure provided by

the user as stimulus *(Col. 4, Line 8, Fig. 3, Element 4)*; and

Changing means changes the behavioral model based on a size and length of pressure

detected by a pressure sensor *(pressure amount detection, Col. 5, Lines 54-58, tactile duration*

detection, Col. 5, Lines 38-41. and the generation of emotions for changing robot behavior

according to tactile data, Col. 6, Lines 6-10).

With respect to **Claim 5**, Kamiya discloses:

Stimulus detection means comprises a microphone collecting voice provided by the user

as the stimulus *(Col. 4, Lines 36-38, and Fig. 3, Element 8)*; and

Changing means changes the behavioral model based on the voice collected by the microphone *(evolving robot behavior based upon an audio user input from a microphone, Col. 4, Lines 47-64)*.

With respect to **Claim 6**, Kamiya recites:

Stimulus detection means further comprises a speech recognition means *(voice detection unit that analyzes a voice input from the microphone using speech recognition means, Col. 5, Lines 59-65)*; and

Changing means changes the behavioral model based on a speech recognition result of the voice by the speech recognition means *(evolving robot behavior based upon a voice input from a microphone, Col. 4, Lines 47-64)*.

With respect to **Claim 8,** Kamiya recites:

Stimulus detection means further comprises a prosody information detection means detecting prosody information about the voice *(detecting the tone of a voice input to determine user emotion, Col. 4, Lines 10-12)*; and

Changing means changes the behavioral model according to the prosody information detected by the prosody information detection means *(evolving robot behavior based upon user emotion data contained in a voice input from a microphone, Col. 4, Lines 47-64)*.

With respect to **Claim 11**, Kamiya discloses:

Control step and for controlling drive means to perform a behavior based on a behavioral model prescribing a behavior *(behavior decision means for controlling robot functions, Col. 8, Lines 51-58)*;

Stimulus detecting step of detecting a stimulus *(Col. 4, Lines 6-14)*; and

A changing step of changing the behavioral model based on a detected predetermined

stimulus *(learning and altering behavior based upon user interaction, Col. 7, Lines 3-25)*.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya et al in

view of Fujita et al *(U.S. Patent: 5,966,690)*.

With respect to **Claim 7**, Kamiya teaches the interactive robot capable of recognizing

user voice input as stimulus to produce, learn, or alter a behavior as applied to Claim 6. Kamiya

does not teach the use of a dictionary in speech recognition of a user input, however Fujita

discloses:

Speech recognition means comprises a dictionary storing a word to be voice-recognized

corresponding to a method for changing the behavioral model, and outputting any of words

stored in the dictionary as the speech recognition result *(word dictionary, containing words*

related to robot commands, used in speech recognition, Col. 20, Lines 12-40);

Kamiya and Fujita are analogous art because they are from a similar field of endeavor in

user interaction with a robot through speech commands. Thus, it would have been obvious to a

person of ordinary skill in the art, at the time of invention, to combine the use of a dictionary in

speech recognition as taught by Fujita with the interactive robot capable of recognizing user

voice input as stimulus to produce, learn, or alter a behavior as taught by Kamiya to provide a

means, well known to one of ordinary skill in the art, at the time of invention, of storing

recognized speech commands taught by Kamiya in a dictionary for more efficient speech

recognition in robot interaction. Therefore, it would have been obvious to combine Fujita with

Kamiya for the benefit of obtaining an interactive and configurable robot capable of efficiently

recognizing a speech input through the use of a command word dictionary and utilizing this

recognition output in combination with changing means to alter a robot behavior, to obtain the

invention as specified in Claim 7

5.   **Claims 9 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamiya

et al in view of Lund et al *("Adaptive LEGO robots. A robot=human view on robotics")*.

With respect to **Claim 9**, Kamiya teaches the interactive robot capable of detecting user

voice and tactile inputs as stimulus to produce, learn, or alter a behavior as applied to Claim 1.

Kamiya does not teach the behavioral model as a probability automaton prescribed by a state

corresponding to a behavior and transition probability of the state, however Lund recites:

Behavioral model is a probability automaton prescribed by a state corresponding to a

behavior and transition probability of the state *(robot behavior determined by an internal state*

contained within a behavior set, Page 1021, Behavior Set and Behavior Engine, Fig. 7); and

Changing means changes transition probability in the probability automaton based on the

detected stimulus *(creation of emergent behaviors based on external stimulus, Page 1021,*

Behavior Set, Paragraph 2).

Kamiya and Lund are analogous art because they are from a similar field of endeavor in user interaction with an entertainment robot. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the use of probabilistic internal states in determining robot behavior as taught by Lund with the interactive robot capable of detecting user voice and tactile inputs as stimulus to produce, learn, or alter a behavior as taught by Kamiya to allow for more adaptive robot behavior, thus allowing for increased realism in robot interaction. Therefore, it would have been obvious to combine Lund with Kamiya for the benefit of obtaining an interactive, life-like robot capable of quickly adapting to environment and user input, to obtain the invention as specified in Claim 9.

With respect to **Claim 10**, Kamiya teaches the interactive robot capable of detecting user voice and tactile inputs as stimulus to produce, learn, or alter a behavior as applied to Claim 1. Kamiya does not teach a time lapse as a stimulus for returning to an original state of operation, however Lund suggests:

Changing means restores the behavioral model to an original state depending on a time lapse after changing the behavioral model (necessity for sleep behavior returned to from an awakened state after a duration of time within a 24 hour cycle, Page 1022, State Variables, Paragraph 2).

Kamiya and Lund are analogous art because they are from a similar field of endeavor in user interaction with an entertainment robot. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the time duration in prescribing a robot behavior as taught by Lund with the interactive robot capable of detecting user voice and tactile inputs as stimulus to produce, learn, or alter a behavior as taught by Kamiya to allow for
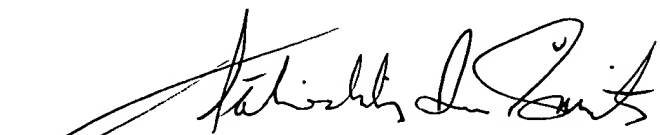

- Shibata et al *("Subjective Interpretation of Emotional Behavior through Physical Interaction between Human and Robot")*- discloses a pet robot with speech recognition capability, emotion detection, tactile information detection, and adaptable behavior models based on user response.

- Naya et al *("Recognizing Human Touching Behaviors using a Haptic Interface for a Pet-robot")*- teaches a pet robot utilizing tactile sensors sensitive to touch duration and pressure in detecting user emotion.

8.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (703) 305-8669 and email is James.Wozniak@uspto.gov. The examiner can normally be reached on Mondays-Fridays, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Ivars Smits can be reached at (703) 306-3011. The fax/phone number for the Technology Center 2600 where this application is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology center receptionist whose telephone number is (703) 306-0377.

James S. Wozniak
2/10/2004

TALIVALDIS IVARS SMITS
PRIMARY EXAMINER